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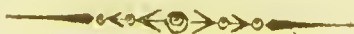
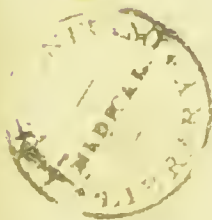
TREATISE
ON
TETANUS,



ILLUSTRATED BY A NUMBER OF CASES.

BY
JOHN MORRISON, M. D.

—“ Quæque ipse miserrima vidi.”



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1816.

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TO
ALEXANDER KING, ESQ.

LATELY OF DEMERARA.

Accept the dedication of this treatise, as a small token of my respect and affection.—Continuing in that path of honour and humanity, for which you have been, for a series of years, conspicuous in a foreign land, may you, with health, enjoy every other comfort, is the ardent wish,

My dear friend,

Of yours, most assuredly,

JOHN MORRISON.

Newry, August 16, 1816.

PREFACE.

I WAS led to the following observations on TETANUS, by its frequent occurrence in the colony of Demerara, where I practised medicine for eight years. This part of the continent of South America is in latitude $6^{\circ} 40'$ long. 55. N. The land is low, flat and marshy, abounding with swamps, and (with the exception of a stripe along the coast and on the banks of the river,* in the cultivation of sugar, coffee and cotton,) is covered with trees of various dimensions, whose roots, for a great part of the year, lie bedded in water.

* The Demerari, from which the Colony takes its name.

The seasons are divided into the wet and dry.* These succeed each other at uncertain intervals, and are of different durations in different years. Moist and rainy weather is by far the most usual; yet there are, now and again, weeks or months of almost intolerable drought.

In 1804, the “dry season” was so intense and long continued, that the woods immediately adjoining the cultivation, took fire—communicated their flames to some of the cane fields, and a considerable part of the country continued in a blaze for several months.

The Thermometer, during the *rainy* season,

* The sugar cane is planted in every month throughout the year; and it is no uncommon thing, to have a part of the negroes on the same estate, planting canes, whilst another part are employed cutting down others in an adjoining field, for the manufacture of sugar; so that it may be said, there is a perpetual harvest and a perpetual spring.

is seldom below 76, or in the *dry*; above 86.—The diseases most prevalent are Intermittents; Fever, attended with an inordinate secretion of bile; Hepatitis; Enteritis; Rheumatism;—Dysentery; and among children, Hydrocephalus is a very common complaint. The subject of this treatise is in that part of the world (compared with its occurrence in Great Britain) frequently met with. At one time, I thought of offering to the medical world, through the medium of some periodical publication, all the cases of Tetanus which had come under my notice, with perhaps some partial remarks: again, on considering that the disease cannot be said to have been treated of separately, I was led to suppose, that an Essay, containing the general history of the symptoms, prognosis, diagnosis, and mode of treatment, accompanied with a few remarkable cases, might be more acceptable,

particularly to the younger part of the profession. I hope this attempt will occasion some others capable of throwing more light on the subject, to appropriate a portion of their time to the consideration of a disease so little understood, yet so fatal in its consequences.

My opinion, with respect to the Cold Affusion, is the part which I feel most diffidence in submitting to the public, as I know it differs from that entertained by many of the first physicians of the present day. I trust, however, it will be recollected, that experience, and experience alone, has impelled me to adopt it; and in this opinion I am strengthened by that of a medical friend, who resided for sixteen years in the same quarter, and consequently, whose field for observation was even more extensive than my own.

OF TETANUS.

THIS disease occurs in all climates, but more frequently in those where heat and moisture predominate; it affects all ages, sexes and complexions.

From Tetanus so often attacking negroes, it might at first view appear, that they are constitutionally more subject to it than whites; this, however, in all probability, depends on their being so constantly exposed to the remote and exciting causes, and not to any peculiar predisposition in the system.

The disease in Europe, is almost always occasioned by wounds or bruises, and rarely occurs as a primary affection, whilst in tropical countries, the Idiopathic form is not unfrequently met with.*

It is impossible to ascertain correctly, what particular part or texture of the body requires to be injured, in order to bring on tetanic affections: we daily observe wounds of every dimension, and of all parts, without being followed by any bad effect; and on the other hand, we shall frequently find a most alarming train of symptoms succeed injuries, in their size and nature seemingly of the most trifling description.

* Hippocrates regarded the varieties of the disease, as consequences of other diseases, or of wounds of the nerves or tendons.

“ I know not (says Mr. Dickinson) of any
 “ description of wound that is entitled to be
 “ considered as offering an exemption from the
 “ risk of being succeeded by Tetanus, from the
 “ greatest injury of this kind to the least ;—
 “ whether lacerated gun-shot wound, violent
 “ contusion, great operation, the most trivial
 “ clean cut, almost imperceptible puncture, or
 “ trifling sore.”*

Tetanus was formerly divided into different
 species, according to the posture of the body,
 when labouring under it, or to the degree of
 spasm of certain muscles affected by it. These
 distinctions are now properly exploded, and we
 shall here notice the disease, under two forms,
 the *Idiopathic* and the *Symptomatic*.

* London Medical, Surgical & Pharmaceutical Repository, Vol. i p. 196.

The first of these is a very rare occurrence in temperate climates ; a warm and moist atmosphere is supposed to predispose to it. It arises from cold suddenly applied, or long continued ; exposure to the night air during sleep ; sudden transitions from heat to cold, &c. &c.

The second species is occasioned by wounds or bruises : such as are supposed to lacerate the nerves, small tendons, or ligaments. A partial division or lesion of a nerve, is thought to be attended with more danger, than the complete separation of this substance ; and I once met with an instance in practice, which favoured this supposition : a negro received a very slight cut on the instep, to which supervened symptoms of Lock-jaw, which, however, gave way to some trifling treatment, after a transverse

incision had been made a little above the original wound. This man came into the hospital with his injury, at a time when there was a person labouring under Idiopathic Tetanus in the same house, and whom he was frequently in the habit (from motives of curiosity or friendship) of seeing. I am led to this remark, as it has been mentioned somewhere, that one with a wound, looking at another in the disease, becomes very susceptible of it. The parts that first become affected are usually the jaws, neck, back, loins and abdomen. The muscles of these parts are rigidly contracted, alternating with intervals of relaxation and ease; perhaps, of the involuntary muscles, the heart itself at length becomes affected.

The attack of Tetanus generally appears to be sudden and without any premonitory symp-

tom. It is sometimes preceded by lassitude and uneasiness, want of sleep, faintings, and dimness of sight, and I believe, in almost every instance, by costiveness: there is a peculiar dejection of countenance, from the very commencement of the attack—"a countenance more in sorrow than in anger," getting, as the disease advances, strongly expressive of the most melancholy distress. This appearance can scarcely be occasioned by the present pain which the patient feels, nor can it arise from a dread of the return of the spasms, as I have frequently noticed this remarkable appearance of countenance, before the spasms could be said to have begun. So strikingly evident is this feature of the complaint, that a practitioner who has seen but a few cases of it, feels his attention more forcibly arrested by it, than by any other.

The symptoms set in something in the following manner : the patient generally first complains of a sense of tightness about his jaws and neck, often about the root of the tongue ; a shooting pain from the *cartilago ensiformis* towards the spine ; the abdomen is tense and hard, the muscles seeming not to yield to the descent of the diaphragm in inspiration ; bowels obstinately costive ; a sense of weight is felt about the loins and small of the back ; the pulse not much excited, fuller, but seldom exceeding eighty pulsations in a minute ; in the absence of the spasms, the pulse is little or nothing affected ; the respiration is at times hurried, as if after violent exercise ; the heat of the body rather above the natural standard, though the extremities are colder than usual ; the urine is suppressed, or passed with considerable difficulty ; sleep is not enjoyed, yet

the memory remains firm and unblunted to the very last.

By degrees, all the symptoms get worse; the muscles of the neck and jaws become so rigid, that the patient cannot turn his head, unless accompanied by a corresponding movement of the body; speaking or swallowing is attended with great pain; the body and head are sometimes bent back like a bow; the muscles of the cheek drawn towards the ear, the peculiar dejection of the countenance becomes more and more remarkable, and the miserable sufferer seems to succumb under his dreadful situation. In some rare instances, the muscles of the jaws are but little affected, whilst those of the neck, spine and abdomen, are violently contracted.

Each form of the disease is attended with the same train of symptoms, so that it would be impossible to distinguish between the two species, except by the previous history of the case. If there be any degree of difference (as some contend) it consists in the spasms, or rather spasmodic twitchings, being more distressing in the Symptomatic, than in the Idiopathic form.

The intervals of ease or relaxation of the muscles, depend on the violence of the attack. At first, the spasms recur every ten or fifteen minutes, and are generally renewed by external impressions, or by any exertion on the part of the patient, by which his neck or body is put into motion. They will at any time be produced by pressure on the abdomen.

In some cases, the spasms of the neck are violent, and brought on by the slightest movement of the body, especially by attempting to swallow, or by the act of deglutition itself.

Throughout the disease, there is a morbid sensibility to all external impressions, and in its advanced stages, strong spasms are instantly produced by the presentation of any substance, *solid* or *fluid*, to the lips, so as at first view to resemble a person affected with *Rabies Contagiosa*. Though there is no desire for food, yet the disease is never attended with the least nausea, nor is the mind affected with the slightest delirium.

Its *duration* is, for the most part, in an inverse ratio to the suddenness of the attack, after the supposed cause. This observation, of

course, holds good in both species of the complaint. Instances occur, where the symptoms set in very gradually, and the disease is protracted for several weeks. I have known a patient die in forty hours, and one case, where the disease was prolonged for twenty days, and after all, prove fatal. In the generality of instances, however, where Tetanus proves mortal, it carries off the patient before the tenth—often before the fifth day: the younger the subject, the more rapid the disease.

Sometimes a relaxation of all the muscles takes place, eight or ten hours before death, so that the patient will appear to the attendants in a fair way of recovery.

The interval between the cause and the appearance of the symptoms, when Tetanus takes

place as a primary disease, is, I believe, very short. In one of the cases annexed, I think it will appear that the disease set in, in less than twenty-four hours after the cause; and in the generality of instances of this kind, I am of opinion that the cause does not precede some of the symptoms (costiveness for instance,) longer than this period. In that species which arises from external injuries, the *latent period* will be found to vary in different persons: the symptoms seldom set in till the wound or lesion (when it has been of a trivial nature) be nearly well, and it is the common opinion, that a free suppuration secures the person from an attack.

The same extent of injury would seem to require a shorter or longer dormant period, ac-

ording perhaps to the mobility* of the nervous system. Much certainly depends on the constitution of the patient. If a proof of this were necessary, I would say, that in three cases which have come under my care, brought on seemingly by the *same proportion of cause*, viz. a severe flagellation,† the disease set in subsequent to the cause, at different periods in the different persons, and in all it proved fatal (after successive attacks of general convulsion) before the fifth day.

* Susceptibility of impression.

† Flagellation—It ought not to be supposed, that the disease here considered, is often occasioned in the West Indies by this cause.—The instances here mentioned, with one more, are all I have known to arise in this way. The three negroes whose cases are alluded to, absented themselves for several months from the plantation to which they belonged (the Golden Grove) During this time, and in the enjoyment of what they understood to be “freedom,” they committed various acts of depredation (any one of which would in England be deemed a capital crime).—On their return to the estate, the manager, J. D—— ordered each an equal number of lashes, which doubtless brought on the disease, and it was only by flight that he saved himself from making atonement to the offended laws of the colony.

When the disease has been occasioned by punctures, or small pieces of wood, nails, or such substances, where the external injury, (comparatively speaking) seemed not of a very violent nature, the symptoms most commonly set in, somewhere from the eighth till the sixteenth day, modified considerably (as before hinted at) by the irritability of the constitution.

It has been observed, that the male sex are more subject to the disease than the female. This may be accounted for, by the former being more exposed to the exciting causes,* such as vicissitudes of temperature, night air, and to all the variety of external injuries which

* Negroes are much in the habit of plunging into a mill-race, or nearest canal of water, immediately after leaving the "boiling-house,"

usually bring on the Symptomatic species.— Persons of robust constitutions are particularly liable to this disease, and its violence seems to be in direct proportion to the strength of the muscular fibre.

Some think that patients are apt to relapse after the symptoms have all given way: of this I have met with no decided instance. I observed in one case, which came on very mildly and gradually, where the disease was protracted for three weeks, that about the end of the second week, although the patient did seem to get much worse, yet the symptoms almost im-

where they have been for several hours over a teach or copper, filled with boiling syrup; the surface of the body, at the same time, covered with perspiration, and at a temperature below the natural standard. I knew a strong muscular man much in the above practice, die of Tetanus on the fourth day, where in all probability the disease had its origin in this cause.

mediately gave way, on an increase of the medicine, that indeed had been rather discontinued, or not given in that progressively increased dose, which the use of it requires.

The disease is said often to supervene certain bowel complaints, suddenly checked, in the East; and Dr. Grainger informs us, that it sometimes succeeds *Colica Pictonum*, in the West Indies.—I have very frequently seen a different state of the muscles (paralysis,) particularly of the upper extremities, immediately after *Colica Pictonum*, as well as after *Enteritis*, but never a rigid contraction of them, as in the disease under consideration.

Though in all climates Tetanus is amongst the most alarming and deadly diseases, yet in

the West Indies it puts on a much milder appearance than in Europe.

Of the two forms, that arising from external injuries is universally allowed to be by far the more dangerous. Dr. Clark says—
 “Whereas the latter proceeding from a lesion
 “of nerves or tendons, has, from my own experience, and that of all my medical acquaintance in the West Indies, resisted every
 “remedy hitherto tried, having always proved
 “fatal.”*

Though I certainly look on the Symptomatic form to be attended with more danger than the other, yet I do not at all regard the difference of danger in that degree, as most practi-

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* Treatise on Yellow Fever and other West India diseases.

tioners do ; I have known many examples of perfect recovery from both, and it may appear somewhat strange, when I assert, that I have witnessed nearly as many instances of a cure from the Traumatic, as from the Idiopathic form.

Doctor Parry thinks the danger may be estimated in proportion to the quickness of the pulse : “ If in an adult, the pulse by the
 “ fourth or fifth day, does not reach a hundred
 “ beats in a minute, I believe the patient
 “ almost always recovers. If, on the other
 “ hand, the pulse on the first day is one hundred and twenty or more in a minute, few
 “ instances, I apprehend, will be found in
 “ which he will not die.”*

* Cases of Tetanus and Rabies Contagiosa.

I can positively affirm, that in upwards of twenty cases of the disease, (in negroes) which came under my care, there was no instance in which the pulse was in any manner so much excited, as in those detailed by Dr. Parry. In a case mentioned by Dr. Curtis, in the Medical Transactions, the pulse is said to have been “regular”——“*if it deviated at all from the pulse of a person in health, it was rather slow than quick, and somewhat fuller than natural.*”*

I recollect the pulse (in the absence of

* This exactly corresponds with the history of several cases which have lately appeared in different periodical publications.

In a case which I attended in Newry, with Dr. Mollan (now one of the physicians to the Dublin General Dispensary), it was particularly remarked that the pulse was little or nothing affected.—The patient died.

In another instance, in Newry, of a patient of Mr. Woods, to whom I was called, about two hours before his death, the pulse (in a child of 8 years old) was rather slower than usual at that age. Opium, calomel and the cold affusion had been used.—This patient also died.

spasm) at ninety-eight, in a boy who fell a victim to the disease on the third day; but I cannot say that I have ever remarked it higher than this, either in cases which terminated fatally, or in those which recovered; nor does it appear to me, that we can form any prognosis from the state of the pulse: during the spasms it will be found to rise eight or ten strokes in a minute, but in the state of relaxation, it will deviate but little from that of a person in perfect health. When the disease comes on gradually—when for the first three or four days the muscles of the jaws are solely affected, and that perhaps not in any alarming degree—when the abdomen is not preternaturally hard, or the bowels obstinately costive—when the skin is moist and moderately warm—and above all, when the patient enjoys sleep, we may (by the means hereafter to be spoken

of) entertain strong hopes of an eventual recovery. An increased flow of saliva, where mercury has, or has not been used, is always to be regarded as favourable; the less the general air of the countenance is changed, the better. On the other hand, when the attack is violent and sudden—when the muscles of the neck, back and abdomen, are rigidly contracted—when the patient complains of a shooting pain from the sternum towards the spine—when the belly feels hard like a board, and the least pressure thereon produces spasmodic twitchings or contractions of the muscles of the neck, jaws, &c. or when the same effect is brought about by the presentation of any substance (solid or fluid) near the mouth, we have much reason to fear a fatal termination. Spasmodic startings of the muscles set in sometimes early in the disease, and recurring every eight or ten minutes, are

to be regarded as very unfavourable. Though in forming a general prognosis, we have reason to fear an unhappy termination, when the symptoms set in violently and suddenly, yet I have met with one instance which formed a striking exception to this rule, in which the disease (the Symptomatic species) appeared most violently, and almost immediately after the cause, where the patient's head was bent back, so as to make the body, in some manner describe the arch of a circle; yet the person (a boy of about eighteen) got perfectly well.

Tetanus can scarcely be confounded with any other disease, so as to render necessary any diagnostic marks: the very countenance is peculiar, and cannot fail thus to strike any person of common discernment. It is really diffi-

cult to conceive it possible for this disease to be mistaken for *Rabies Contagiosa*. The following discriminating symptoms may be mentioned, so as to preclude the possibility of the youngest practitioner mistaking one for the other.

Rabies Contagiosa (Hydrophobia) is accompanied by fever, and a general increase of the heat of the body. Vomiting is common at the commencement, whilst in Tetanus there is not the slightest nausea. In the former, the patient is much agitated, and performs every action in a hurry; here there are intervals of ease, which are not at all so evident in Tetanus, where certain muscles are rigidly contracted, with little intermission, from the beginning. Neither this rigidity, nor the hardness in the abdomen is observable in the other. In *Rabies*

Contagiosa, a sobbing inspiration precedes the act of swallowing, and here the patients can swallow *solids* without difficulty: in Tetanus it is entirely otherwise. In Hydrophobia, the patient is *delirious*, and the *delirium* itself is peculiar. Dr. Parry says—"The patient shall
 " go on, talking with vehemence, and for many
 " successive hours, of past events, as if they
 " were present—shall fancy objects to be dif-
 " ferent from what they really are, and shall
 " even act on these delusions: yet no sooner is
 " his attention excited by questions put to him
 " by his friends than he shall answer them, and
 " continue for a considerable time to converse
 " with a calmness of manner and coherency of
 " ideas precisely similar to those of a person in
 " perfect health."

In Tetanus, the mind seems perfectly re-

signed, firm and undisturbed even until death. The shooting pain from the sternum to the spine, is one of the most usual attendants on Tetanus.

The bodies of those who die in this disease, run rapidly into putrefaction. Few of them have been examined after death, and those that have undergone inspection, tend to throw but little light on the nature or seat of the disease. To say that it has its seat in the brain or spinal marrow, though these, and every other part of the body, are sometimes found on dissection apparently free from disease—or that it depends on something immediately connected with the nervous system, is, in other words, acknowledging that, concerning the pathology of the complaint, we are much in the dark.—

The fact is, that in several instances of the most careful examination of the bodies of persons who have died in this disease, no morbid appearance whatever, could be discovered, either in the head, thorax, or abdomen; and though it is equally as certain, that in some cases the vessels within the cranium have been found turgid—one of the ventricles filled with fluid—the heart closely contracted, and containing but a minute portion of blood, yet having in several instances found it impossible to trace any such appearance after death, I think we are warranted in supposing that the organic derangements sometimes found, are not necessarily connected with the disease.

In the West India islands and colonies, a certain form of this complaint—the *Trismus*

*Nascentium** is very common. Infants under the *ninth* day are particularly subject to it, and it very seldom, though sometimes occurs after this period: the jaw at first hangs down, and the infant is incapable of taking the breast; costiveness and hardness of the abdomen are also present.

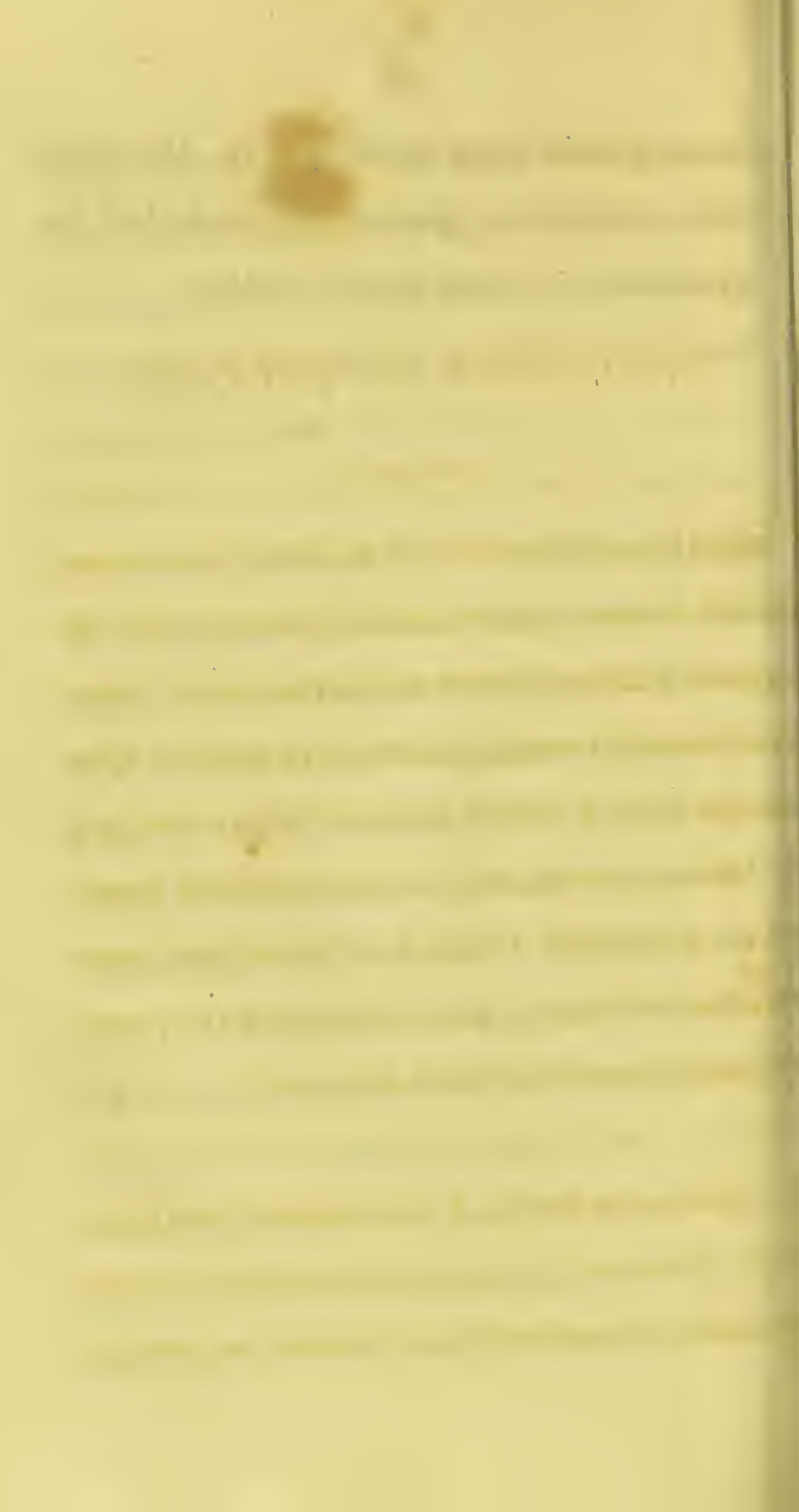
This form is generally supposed to be occasioned by some circumstance connected with the division of the navel-string, such as by a blunt or lacerating instrument. By some it is believed to be brought on by retention of the *meconium*, and according to others, by confined and smoky apartments: the smoke from burning wood (the common fuel there) is believed to be particularly obnoxious at this age. I

* Termed commonly the "jaw-fall."

have very frequently seen this affection occurring, after the most correct division of the umbilical chord, and also in instances where retention of the meconium could not be considered as a cause.

Cold or vitiated air is probably the most common cause of this very fatal disease. Some plantations in Demerara, of two or three hundred negroes, know the disease only by name; whilst in others, it might be almost said to be Endemial. I recollect a woman, on plantation New Hope, to have lost three children successively by Lock-jaw, all under the ninth day—yet in none of these could the disease be traced to any of the usually ascribed causes. I have never known one authenticated case of recovery, where it attacked infants on or before the above period. The usual means which are had

recourse to in these instances, are, the warm bath, purgatives, opiates, and Barbadoes tar by friction, &c.—but always in vain.



TREATMENT OF TETANUS.

SOME are of opinion, that from this disease there is never a spontaneous recovery, and all agree, that the greater number of cases, however actively treated, terminate in death. One author says, “ There has never been any thing like a crisis observed in these frightful cases, or favourable termination from the mere efforts of nature, and therefore all the physician’s dependance must be on art.”

For my own part, I am inclined to think, that there are instances of persons, in warm climates, recovering from Tetanus, even with-

out having used any thing that could have any decided effect on the constitution.

I have known a well authenticated instance of a negro who recovered from a clearly marked case of Lock-jaw, without having used any medicine that could have had much effect on the system labouring under such an affection. This man was employed in cutting wood, at a considerable distance from any medical aid, and received a slight wound of a clean edged instrument on the leg, which was succeeded, after some days, by rigidity of the muscles of the neck and jaws—obstinate co-tiveness, and in short, by all the usual symptoms of Tetanus. His master, from whom I had the information, gave him a dose of salts, and afterwards some jalap and calomel, with little or no effect. He continued under the

disease for six or seven days, and gradually got better. He had a profuse perspiration about the fourth day from the commencement of the attack.

The disease, I apprehend, is not uncommon in Africa, for I have known persons from that country on receiving a punctured wound, or cut, immediately to have the parts adjoining well beaten, or rather bruised, with any blunt instrument, such as a piece of wood, or a stone: This, with a warm poultice, (say these) are used in Guinea to prevent the “jaw-lock.”

I think Tetanus is regarded in all countries in a more desperate point of view than it really deserves. In warm climates, it certainly is not that very formidable complaint that some au-

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thors would lead us to imagine, and even in this country, I am persuaded we would see more examples of recovery, were our practice prompt, decided and unremitting.

Though the Symptomatic species may be allowed to be the more dangerous form, yet there can be no difference in the treatment of either, except what relates to the wound or local injury, the cause of the disease ; indeed, when once it is fairly formed, we ought to place but little reliance on any local application for combating such a complaint.

It is common in the West Indies, to apply to a newly received wound some stimulating substance, as oil of turpentine or the like.— This, with the application of an emollient cataplasm, so as to induce free suppuration,

may be very proper as a means of preventing any unpleasant effects that might otherwise ensue ; for experience has shewn, that wounds from which there is a copious discharge of bland pus, are seldom or never followed by this disease.

Doctor Clark* advises a slight affection of the mouth by mercury, for the same purpose. This, however salutary it might prove, will be found to be seldom submitted to.

If symptoms of spasm set in shortly after a wound or division of any part of the body, it might be right to divide the before supposed half-divided nerve. With this view, a transverse incision is to be made between the prima-

* Treatise on Yellow Fever, &c.

ry injury and the sensorium: all the means in our power for bringing on suppuration are also now to be brought into use.

The Spanish physicians order the wound to be bathed for an hour or more, in warm oil. nitrate of silver is recommended by some, to be applied to it. Others advise acetite of lead, &c.

So far, with respect to the local treatment. There are few diseases which are said to have been cured by such seemingly opposite means, as that under consideration. Different remedies are extolled by different authors. Of those which seem to have been preeminently useful, we shall mention: the *cold affusion*, *mercury*, *opiates*, *wine and bark*, the *warm bath*, *cathartics*, *blisters*, *anti-spasmodics*.

The application of cold water in Tetanus, is a very ancient practice, being recommended by Hippocrates himself.

In the Edinburgh Medical Commentaries, we find a cure of this disease ascribed to the cold bath, by Dr. Cochrane, then of the island of Nevis, in this case however, there were other means (and those not of an inert nature) resorted to at the same time. Dr. C— says that his patient was bled—took laxatives—got aperient injections, and swallowed tincture of opium in the proportion of *two hundred drops* a day, at first, and by degrees, in still larger proportions. From these facts it may be presumed that the medicine he took, at least rendered *some assistance* to the cold bath.

Doctor Wright has given a detailed account

of half a dozen of cases,* in which this remedy seemed to have had the happiest effects; and the late ingenious Dr. Currie used the cold affusion with advantage, and speaks highly of it in this disease; and I believe that it is at present, (principally on his recommendation) the most generally approved remedy in practice.

For the first two or three years of my residence in the colony of Demerara, and in the first eight or ten cases, I invariably used the cold affusion, as directed by Dr. Currie, in his excellent "Reports;" but I cannot say with any thing like that success which I thought I had reason to expect: by degrees, my faith in this so much extolled remedy, became shaken, and I latterly (and in by much the more suc-

* London Medical Transactions, Vol. vi.

cessful instances of my experience,) left it entirely off, and have repeatedly used a directly opposite mode.—the warm bath, with much happier results.

At a time when I was beginning more than to question the efficacy of the cold affusion, a circumstance occurred, which rather confirmed me in the opinion, that it was by no means worthy of that confidence so generally placed in it. A stout healthy man, belonging to plantation New Hope, got an attack of the disease in its Idiopathic form, and had been treated under my own direction, with large quantities of opium and wine, which seemed for several days, to have at least arrested the complaint.—I now directed the cold affusion to be used with him, as a possible means of assisting the other treatment, conceiving it, at the same time, a

fair opportunity (as far as one instance goes) of ascertaining the virtue of the means revived, and so much recommended, by Dr. Wright. I stood by while he underwent the affusion twice, but had the mortification of witnessing my patient die a very few minutes after he had undergone the second operation.

This was the third case of Tetanus which I had met with on the same plantation, within a few months of each other, with all of which I had ordered the cold affusion, and they all died. This circumstance made such an impression on the proprietor of the plantation, a most humane and well informed man,* that he requested me never to use the cold bath again with any of his negroes in this disease.

* The late Alexander Macrae, Esq.

In the opinion of Dr. Parry, the cold bath is rather of injury than benefit. In the case of Wm. Godby,* he says the cold affusion had been practised twice, and each time brought on fits of convulsion; so that his parents “ earnestly requested that it might not be repeated, as the child was evidently worse; for though he answered questions well and rationally, his pulse was one hundred and eighty in a minute, the contraction of all the muscles was more violent than before, and there was great labour of respiration, which appeared to be carried on chiefly by the diaphragm, though at times the ribs were suddenly and preternaturally elevated.”

Dr. P's. next patient seemed to have been

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* Cases of Tetanus, &c.

restored to health by opium and mercury: with him the cold affusion was not used. This author further adds, "*Hot and cold bathing have certainly, on the whole, done injury.*" Dr. James Clark, formerly of Dominica, says,—
 "The cold bath never answered with me, although I have frequently used it."

I must own that I never saw any good effects from the use of cold water in this disease. I think I have seen it fairly tried in nine or ten instances, and in some of them, as I conceived, with evidently bad effects:

From different conversations which I have had, from time to time, with several medical gentlemen who had seen many instances of the disease, not only in the colonies of South America, but in several of the West India Islands,

I was led to conclude that the application of cold water, either by immersion or affusion, was gradually getting into disrepute.

Mercury—Spontaneous salivation has been repeatedly observed in those cases which terminated favourably, and probably it was from this circumstance that the oxyds of quicksilver were first resorted to in this complaint. Be this as it may, we would naturally suppose that a medicine capable of bringing on that sudden and new action in the constitution—a power which we know mercury so peculiarly to possess, would be likely to be one of the most formidable combatants in this very distressing disease.

Against the use of mercury, it has been urged, that its effects on the constitution can

seldom be brought about in time, in a complaint that “ mostly carries off the patient before the fourth day;” and that in these mild and lengthened cases, where it appeared to have been of service, the disease most probably would have terminated happily without its use.

In warm countries, Tetanus is seldom so rapid, as to prevent a considerable portion of some of the preparations of this active mineral being introduced into the system in due time, provided medical aid be resorted to at the commencement of the attack; and in climates where the disease runs a more rapid course, it ought never to be omitted, as its use neither interferes with, nor prevents the administration of any other remedy.

In the Edinburgh Physical and Literary

Essays, Vol. iii. Dr. Donald Monro speaks of mercury by unction till salivation be produced, as a medicine of great efficacy. He advises it under the authority of a medical gentleman who resided for a length of time in the island of Jamaica, and succeeded in curing no less than twelve cases by mercury alone. He ordered his patients into a warm room, and had them well rubbed with the ointment, and as soon as salivation commenced, the disease gradually gave way. There is also a case mentioned by Dr. A. Monro, where a man suffered Tetanus from a compound fracture of the leg—slight salivation was brought about by unction, and the person perfectly recovered. Mercury has been employed in France, of late years, with great success:* and Dr. Clark (before men-

* Journal de Medicine, Vol. xlv.

tioned) says, “ But to shew the powers of mercurial friction, I cannot but add, that in two cases of Idiopathic Tetanus, I ordered a pound of mercurial ointment to be applied by friction, in the course of three days, by which the gums were affected, the spasms abated, and both patients speedily recovered.”

I undoubtedly have had many examples of the good effects from mercury, in the cure of this disease. Four grains of calomel, given two or three times a day, with three or four drachms of the ointment well rubbed on the neck and spine, night and morning, I believe to be excellent practice. A much larger quantity of the ointment may be used on different parts of the body ; indeed the more continued the friction, the better. The constitution labouring under this disease, will mostly appear as proof

against the usual effects of this medicine; but when salivation can be brought about, it will in a great majority of cases be found to be attended with the happiest consequences. Allowing the spontaneous salivation which sometimes occurs, to be more the *effect* than the *cause* of the cure, still we would be inclined to throw in large quantities of mercury, merely with a view of bringing on any different action in the system.

The submuriate of quicksilver with scammony or jalap, as a purge, may be used with good effect in the beginning of the disease, in doses of six or eight grains of the submuriate, with fifteen of scammony, or double this of jalap, which ought to be repeated as circumstances may require or admit of, without suspending the use of other means immediately to

be considered. On the whole, I would always recommend mercury, as one of the means to be employed in all countries, in the cure of locked-jaw, and I think it ought to be regarded as holding a *second* place in power, for that purpose—that is to say, I would place it next to the remedy which we are now about to notice.

Opium.—This substance, either in the solid form or in that of tincture, will be found of all others, the most valuable in this horrible disease. I have met with more than a dozen instances, where I could fairly attribute the cure to this medicine alone, and I have met with no instance of recovery, in which I did not conceive that it bore a very principal part. It must be given, however, in much larger doses than are usually practised.

There need be little or no apprehension of any unpleasant consequences, from quantities, which in any other disease would bring on very alarming effects, the system under Tetanus being little affected by doses of this medicine, which at first view, would appear enormous. A practitioner, for whose acuteness and discernment I have great respect, gave to an old man, in my presence, who was in an incipient stage of this disease, about half an ounce of tincture of opium, in four ounces of rum, as a *first dose*, directing, at the same time, the spirit to be frequently repeated, and the man got perfectly over the complaint, in a few days.

In most of all the cases of cure attributed to the cold affusion, opium, in large quantities, was given at the same time. Dr. Cochrane's

patient, whose recovery is attributed to the cold bath, got no less than two hundred drops of tincture of opium a day ; and in the twenty-three cases so hastily run over by Mr. Dickinson,* those that recovered, with very few exceptions, swallowed opium, as we are to suppose, in very considerable quantities. To an adult in this disease, I would never begin with less than one hundred drops of the tincture of opium, (bowels being opened) increasing each succeeding dose one-third every two hours, unless sleep or stertor in the breathing ensue ; ordering, at the same time, wine or ardent spirits, in as large quantities as the patient can be induced to swallow. I have generally directed the tincture of opium to be given in two or three ounces of brandy or rum, and my patients

* See London Medical Surgical and Phar. Repository, Vol. i. page 192.

most commonly took, on a moderate calculation, a pint of spirits, or double that quantity of wine if preferred, in the course of the day. In addition to this, I have frequently ordered the spine to be well rubbed with the tincture, three or four times a day.

Some think highly of the vapours of opium inhaled, as a good means of introducing this substance.—Of this I have not made trial.

The *warm bath* should be regarded rather in a favourable point of view: it has afforded much present relief in several occasions under my own eye; where especially the spasmodic twitchings were frequent and troublesome, I think I have witnessed evident benefit arise from its application; these startings became less frequent and severe, and the sufferings of

the patients much alleviated. In a case of that variety of the complaint, termed *Opisthotonos*,* the warm bath was attended with the most soothing effects. The patient was put into a hogshead of hot water, three times a day, and remained in it, to his great satisfaction, for eight or ten minutes, when the spasms were evidently much relaxed, and his sufferings relieved. Doctor Chalmerst speaks very favourably of the warm bath, and advises his patients “to lie horizontally in the bath, and while in it to have the whole body extremely well rubbed; when taken out, they are not to be dried, but immediately put to bed, wrapped in the softest blankets, and while they remain there, the belly

* I have never seen an instance of what has been described as *Emprosthotonos*, nor have I ever conversed with any person who did; though it would appear from M. Larrey, that this species is met with more frequently in Egypt, than the *Opisthotonos*.—*Mém. de Chirurgie militaire*.

† See Medical Observations, Vol. i.

ought to be stuped, or two or three bladders filled with warm water kept constantly to it.”— This, with large doses of opium, is what Dr. Chalmers principally depends on.

Patients most commonly express themselves relieved while in the warm water ; and of the two, I am decidedly of opinion, that it is attended with better effects, than the application of cold water. I must observe, however, that the greater number of cases that latterly came under my charge, and which in the end recovered, underwent neither the cold nor the warm bath ; and I am persuaded the effects of either, are far inferior to the use of opium, wine and mercury.

The exertion or movement which the patients must undergo, in order to get into the

bath, will often more than counterbalance any good effects that can be expected from it.—They are much alive to all external impressions, and the least exertion is often sufficient to excite violent spasms; for this reason, the patient should remain in as perfect quietness as the nature of the circumstance will admit; the physician should ask him as few questions as possible, as every thing necessary to be known, once the disease is formed, can be as well ascertained from the attendants. The chamber should be kept darkened, and every thing which tends to excite mental exertion, should be carefully avoided.

Blistering Plasters.—In the second volume of the Medical Transactions, we have an account of a cure which Dr. Carter thought was effected, principally by a blistering plaster over

all the spine, together with some antispasmodics, as *oleum succini*, &c. This patient, however, had also made use of some opium: he had taken, before the Doctor saw him, twenty-eight grains of opium, with fifty of musk, in the space of twenty-four hours, yet does Dr. C. attribute the cure to the means which *he* employed, viz. blistering the spine.—

“Credat Judeus”———

Though decided benefit is not to be expected from blistering plasters, yet their use is by no means to be condemned. On the contrary, I would generally advise their application, having at least never heard of any bad effects supposed to have arisen from them.

Bark and Wine. Doctor Rush* looks on

* Professor of Medicine in Philadelphia.

Tetanus as depending on relaxation, and consequently recommends those medicines which seem best calculated to restore the tone of the system : for this purpose, he orders the free use of bark and wine.

M. Latta (see his *System of Surgery*) advises nearly the same practice, with a view of bringing on a *Phlogistic Diathesis*, so as to encourage a free suppuration from the wound.— This author seems to think the disease seldom or never arises, except from external injury.— Dr. Hossack succeeded in curing the disease by wine and bark, and a case occurred sometime since, in the Liverpool Infirmary, where it was cured by a copious use of Port wine alone.

Wine and opium act on the human body in

the same manner, and in certain doses, bring about nearly similar effects. I would always order (during the exhibition of opium here) large quantities of wine or diluted alcohol, not only with a view of availing myself of their power as remedies, but also of moderating the secondary effects of the opium.

Cathartics.—This is not the only disease in which purgatives have been strongly recommended, particularly since Dr. Hamilton's excellent treatise on their general use. However necessary and much to be wished, a free state of the bowels is, throughout the disease, yet were we always to delay other means, 'till this end be brought about, I fear we would, in many

* We have heard of several instances of horses being cured of Tetanus, by pouring large quantities of port wine into the stomach.

instances, render but little service to the patient. The matter obtained from the bowels here, is of a natural appearance, as in health ; were it otherwise, as in typhus fever, we might be more inclined to retard the exhibition of other remedies, 'till free evacuations shall have been produced. I have known several cases where no motion was procured, either by cathartics, or clysters, for forty hours, and the persons got well over the disease, having used in the mean time, large quantities of opium, mercury and wine.

*Blood-letting** has been repeatedly had recourse to, but I believe with no marked success. Electricity has also been suggested, but we have no recorded fact of this method having answered any good purpose. Barbadoes tar, amber, musk, castor, assafoetida, and camphor,

have all been employed, but with little, or perhaps no advantage. If any of these possess active power in this disease, it is the camphor.

Having briefly noticed the principal remedies recommended by different practitioners, in Tetanus, with my opinion of the merits of each—an opinion not rashly taken up, but founded on an experience as extensive as has fallen to the lot of most individuals of the present day, I shall finish these observations, by stating the general practice which I would recommend, being that which I have found the most successful in this so frequently fatal disease.

The bowels should be kept as free as possible. We must endeavour to bring about an operation every twelve hours. This, even by the aid of

strong cathartics, or purgative injections, will be found very difficult to be obtained; the sphincter ani sometimes scarcely admitting of the introduction of a clyster-pipe, and the exhibition of the strongest purgatives may often be attended with little or no effect. Sulphate of soda, jalap and calomel, scammony, pil. aloes, cum colocynthide, &c. are as proper for this purpose as any other, aided by stimulating clysters, such as a solution of muriate or sulphate of soda, with olive oil; the resin of turpentine, suspended by the yolk of an egg; solutions of soap, &c. I have found it, on two or three occasions, impossible to open the bowels freely, 'till after large quantities of opium had been taken, which seemed to bring about a general relaxation; or until the system had been evidently under the influence of mercury; and, indeed, these are the two medicines on

which we are to place the greatest confidence, in the treatment of this disease : they must be given, however, as before remarked, in large doses, and frequently repeated. I once gave a patient, who is, I believe, still living, ten grains of opium and twenty of calomel, in pills, and five ounces of the tincture of opium, in wine, all in the space of twelve hours.

Next to opium, I certainly look on the preparations of quicksilver as the most valuable. Large quantities of the ointment may be rubbed on the spine, neck, legs, &c. with repeated doses of submuriate internally. Wine and ardent spirits should be given freely : indeed, the constitution here appears as insensible to their usual effects, as to those of opium ; and quantities, which in a state of health, would produce stupid intoxication, now neither exhilarate the

spirits, nor disturb that serenity of mind, so conspicuous throughout the disease.

The *Warm Bath* will often be found a useful auxiliary ; when we expect to derive advantages from it, the vessel used should be so capacious, as to allow the patient to be as little confined as possible, and the water should be sufficient to cover the shoulders completely. I have found a common rum puncheon sawed across at the centre, very convenient for this purpose.

I have generally used blistering plasters, but confess I have never experienced much benefit from their application.

When the disease is conquered, the patient should take wine and bark for several weeks.

CASES OF TETANUS.

CASE I.—(IDIOPATHIC.)

Of a Negro, on Plantation "Free and Easy."

DECEMBER 15th, 1808.—3 P. M.

THIS man, æt. 30, came into the hospital belonging to the plantation, this morning, complaining of pain about the root of his tongue, with difficulty in swallowing, which he felt on awaking this morning:—had been in the boiling-house the greater part of the last night, and "washed his skin" in the mill trench before he went to sleep:—felt perfectly well yesterday. The pain is increased, on opening his jaws wider than usual, so that the fauces can-

not be minutely inspected; appears languid and fatigued; had an operation by his bowels yesterday morning; abdomen feels tense and hard; pulse 80, and full; respiration natural.

I ordered this man two ounces of sulphate of soda, to be taken immediately, and directed him to use a gargle, composed of syrup, acidulated with vinegar.

16th.—10, A. M.

The salts produced two operations in the course of the night, and he passed some urine; slept little or none; feels pain under the *cartilago ensiformis*, which, on any exertion, shoots back next the spine; his eyes are half closed, and the general appearance of the countenance anxious and melancholy; tightness about the neck and jaws more severe; pulse fuller than

yesterday, but not increased in frequency; umbilicus rather drawn in; spasmodic startings of the muscles of the neck and upper part of the body, every ten or fifteen minutes; the surface of the body warmer than usual.

This man was now put into a puncheon filled with cold water: the shock seemed very severe. The moment he was plunged in, the muscles of the lower extremities were violently extended. He remained in the water about three minutes, and seemed, while in it, to respire with difficulty. When taken out, he got eighty drops of tincture of opium, in about three ounces of rum; a blistering plaster was applied to the sternum, and the tincture of opium directed to be repeated every two hours, taking in the mean time, as much wine, as he could be easily induced to swallow: a pur-

gative clyster was thrown up, and the spine rubbed with about two drachms of mercurial ointment twice a day.

17th—9, *A. M.*

The muscles of the neck and jaws are more rigid than yesterday ; the head is kept rather to the left side ; three injections (composed of a solution of sulphate of soda, with castor oil) were administered with much difficulty, owing to the constriction of the sphincter ani: the last produced a small operation about six o'clock this morning ; speaking is attended with much pain ; did not take the tincture of opium regularly, owing to the difficulty attendant on deglutition : pulse 84.

With much exertion, he was got to swallow a desert spoonful of tincture of opium ; he clenched his teeth firmly on the spoon.

The cold affusion was now had recourse to, which rather increased the spasms, and seemed to have the effect of alarming the patient exceedingly. After the affusion, his head was not so much inclined to the one side, but the spasmodic twitchings of the muscles became more frequent. He was now offered some brandy, which, on being presented to his lips, brought on rigid spasms of the muscles of the neck, and if persisted in, would apparently have produced general convulsions. A solution of soap and Glauber salts, with castor oil, was directed to be thrown up as an enema, and repeated every hour, till the bowels should be opened; and a desert spoonful of tincture of opium hourly, if he could be got to swallow it.

18th.

Swallowed little or nothing since yesterday;

abdomen as hard as a board ; pulse feeble ; mind perfectly steady ; eyes sunk and glossy.

On presenting him a pill to be swallowed, composed of four grains of opium, he was seized with violent spasms and contractions of the muscles about the neck. He remained in this deplorable situation, till eight o'clock in the morning of the 19th, when he made a convulsive effort, as if to rise from the bed he lay on, and instantly sunk back, motionless and dead.

REMARKS.—The signs of Tetanus in this case, were not manifest to me the first day I saw the patient, having seen only two cases of the disease before. I treated this one, on my first visit, as a slight inflammation of the fauces, till the second day, when the symptoms of Tetanus so plainly appeared, as to leave no doubt of what the disease actually was.

CASE II.—(IDIOPATHIC.)

August 4th, 1809, 5 o'Clock. P. M.

THE negro LIVERPOOL, belonging to plantation New Hope, (æt. 28, strong and muscular) came into the hospital this day, at noon; complains of difficulty in swallowing, and thinks his “palate is down;” there is no appearance of inflammation in the fauces; feels pain under the sternum; slept ill last night; felt the pain early this morning, but thought it would have gone off; pain in the cheeks, when he attempts to open his mouth wider than usual; says his tongue feels larger than formerly; had no operation in his bowels since the day before yesterday; pulse 80; heat of the upper part of the

body rather increased ; countenance peculiarly dejected.

R. Submur. Hydrarg gr. octo

Pulv. Jalappæ gr. viginti

Syr. q. s. f. bolus statim sumendus,

et post horas tres capiat Sulphatis Sodæ unc. duas.

5th—10, A. M.

Took the salts about five o'clock yesterday afternoon, having had no effect from the bolus at that hour ; had a large evacuation about eight in the evening, and two small ones in the course of the night ; slept none ; pain from the sternum to the spine worse than yesterday ; cannot open his jaws so freely ; pressure on the abdomen, which is rather drawn in, brings on spasms of the muscles of the neck and upper part of the body ; countenance more and more dejected ; pulse little or nothing disturbed ; skin dry.

R. Opii duri gr. triginta
 Submur. Hydrarg. gr. viginti.
 f. Pil. quindecim; cap. duas alternis horis
 superbib. vini Madeir. unc. quatuor
 Applicr. sterno Emplm. Cantharid.
 Injicr. Enema purgans bis quotidie.

6th—9, A. M.

Has taken the pills regularly, and got two injections, but with little or no effect; abdomen feels tense and considerably drawn in; pain from the sternum to the spine nothing relieved; slumbered about half an hour this morning; spasmodic twitchings occur about every twelve minutes, during which, the head and shoulders are drawn back; preparatory to the act of swallowing, he seems under much anxiety, and has much difficulty in the performance of it.

Injicr. Enema purgans omnî horâ ad effect. cathart.
 Continr. pilulæ, et capiat tincturæ Opii
 drachmam cum semisse in spir. vini Gall. unciis duobus!

In addition to this, I directed the cold affusion to be used, and stood by till it was gone under; the patient did not seem any thing relieved by it, but on the contrary, as I thought, rather worse.

7th—12, *A. M.*

Had a small operation about an hour ago; underwent the cold affusion again, yesterday evening, about eight o'clock, with no better effects than in the morning; has taken the pills and tincture of opium, as directed, through the night; swallows with much difficulty; can scarcely admit of a tea spoon between his teeth; respiration hurried; pulse 86.

I had now the cold affusion again repeated, which seemed rather to have increased the spasms; on being wiped dry, he swallowed

about a drachm of tincture of opium, in a glass of brandy, and expired in a few minutes afterwards.

REMARKS.—In this case, the cold affusion was evidently injurious. It was resorted to three times, and each time the patient was worse after its exhibition. Indeed, from its apparent effects the first time, I would have been led not to use it again, had I not at this period of my practice, been much biassed in its favour.

CASE III.

March 13, 1810.

A NEGRO, named ADRIAN (of plantation "Belle Vue") æt. 55, of a slender habit, came this day into the hospital, complaining of pain in his neck; was restless and feverish last night; was at his work and in perfect health yesterday; pulse 76; abdomen tense; skin warmer than natural; countenance but little changed.

R. Sulphatis Sodæ unc. duas
Solve in aquæ puræ unciis octo
Tartr. Antim. et Pot. gr. j. m.
Cap. statim.

14th.

The mixture operated three times; slept little or none; neck much more painful; feels

his jaws stiff and uneasy; can't open his mouth more than to half the usual extent; abdomen hard; umbilicus drawn in; countenance characteristic.

Capiat statim Submur. Hydri. grana octo.—Frier. Spina ungo. Hydri. et capiat Tinctæ. Opii drachmas tres 2da. quaque hora, in sp. vini Gall. unc duob.

In addition to this, I directed him to be put into the warm bath every four hours, and to get a large glass of Madeira wine frequently.

15th.

All the symptoms aggravated; slumbered a little this morning; bowels confined; pulse 80; skin moist; the muscles of the back, thighs and legs are now much affected with rigidity; and when it is necessary to remove him from the horizontal posture, to swallow his medicine,

he takes a considerable time in changing his position.

Continr. friciones ex ungo. Hydr. et balneum tepid.—Capiat omnî horâ Tinctæ. Opii semi unciam, et injicr. Enema purgans ter quaterve in dies.

16th.

Has had three injections, which produced the desired effect; mouth nearly closed, but having lost some of his front teeth, fluids are easily introduced by a spoon; swallows with difficulty; has had spasms every ten or twelve minutes during the night, drawing the head back and raising the abdomen, so that during the spasms, the occyput and heels only touch the bed.

Capiat Tinctæ. Opii drach. quinque omnî horâ. Continr. frict. et balneum tepidum. Sumat. Submur. Hydri. gr. quatuor ter de die.

17th.

Inclined to sleep frequently during the

night, but was always prevented by the spasms, which had now become more frequent, and are brought on by any sudden noise, such as the clapping of a door, &c. and are so violent as to throw him almost out of the bed; skin covered with perspiration; pulse, in the absence of spasm, 84.

18th.

Has taken the tincture of opium in the brandy regularly, and about a bottle of Madeira wine, since yesterday; the spasms are less frequent; slept a little during the interval; had a large evacuation by the bowels, about seven o'clock this morning.

Continuantur omnia.

19th.

Spasms much abated in violence and fre-

quency ; abdomen softer ; there is an increased flow of saliva from the mouth, but no mercurial foetor ; the jaws can be opened wider than yesterday, and he seems in every way better ; pulse 88, and not so full as heretofore.

20th.

Omittr. Submur. Hydrarg. contr. Tincta. Opii, vinum et balneum tepidum.

21st.

Can swallow with tolerable ease ; slept about two hours last night ; spasms are nearly gone ; abdomen feels natural.

From this till the 25th, the tincture of opium was gradually left off, when he began to take bark and wine, and notwithstanding his advanced age, he was in a month perfectly recovered.

CASE IV.

Tetanus supervening inflammation of the fauces.

September 14, 1810.

THIS day the negro, named PRINCE, æt. 30, came into the hospital on plantation New Hope with pain and redness of the fauces, attended with difficult deglutition ; head ach ; pulse 88, full and hard ; skin hot and dry.

Aperiatur vena brachii, et emitt. sanguinis uncia sexdecim
Habeat sulphatis sodæ uncias duas. Applic. nuchæ empl. cantharidum.

15th.

Salts operated well ; skin somewhat cooler ; complains much of head ach ; pain and redness of the fauces continue ; swallows a little easier than yesterday.

R. Tartritis Antimonii gr. tria
aquæ puræ uncias octo, m
Capiat cocha. duo ampl. 2dis horis.

As a gargle, I directed him to use vinegar slightly impregnated with *capsicum*.

16th.

The solution of the tartrite of antimony, has kept the bowels freely open; skin moist; head ach relieved; pulse 84; swallows easier.

Perstat in usu mixtæ. antimonial.

18th.

Since the 16th, he has taken two or three doses of the mixture each day; the inflammation in the fauces is nearly subsided, and deglutition is attended with little difficulty.

Omittr. mixtura ex. Tartr. Antim.

This patient remained in the walks of the hospital till the 25th, when he complained of a slight pain and stiffness about the angle of the

jaws, which he first felt on awaking from sleep this morning; he also feels a tightness under the sternum, as if (to use his own expression), his “stomach was tied with a chord;” has had no passage in his bowels for 36 hours.

R. Submur. Hydri. gr. quindecim

Pulv. jalappæ drachmam, m. f. boli tres

Cap. unum 2dis. horis ad tres quatuorve sedes liquidas.

In addition to this, I directed a bladder filled with hot water, to be applied to the ensiform cartilage, and a large blistering plaster between the shoulders.

26th.

Has taken all the boluses which produced three small operations; passed about a pint of urine; pain about the angle of the jaws not increased; pain and stiffness of the loins and small of the back; tightness under the ster-

num worse than yesterday; abdomen hard; umbilicus drawn in; respiration hurried; pulse 76; countenance characteristic.

R. Opii scrupula duo
Subm. Hydr. semi drachmam, f. pil. decem.
Capiat. unam alternis horis.

The spine was well rubbed with mercurial ointment, three times a day, and the cold affusion was used in the evening.

27th.

Slept none last night; has taken the pills regularly; the muscles of the neck and jaws are not much affected; the pain from the sternum to the spine excruciating; abdomen as hard as a board.

Continr. pilulæ ex opio, &c.
R. Emulsionis Camph. (Ph. Ed.) unc. octo, Tinctæ Opii unciam, m.
Capiat cocha duo 5tiis. horis.
Injicr. enema cathartic. ter quaterve in die, ad effectm.

28th.

Has taken the pills and camphorated mixture regularly; the cold affusion was repeated (much against his will) at three o'clock yesterday, which seemed to have been succeeded by strong spasms of all the muscles of the body; had a small operation this morning; there are present every five minutes, spasmodic startings of the back and neck, and which immediately recur if any thing be presented to the lips; during the spasms, the head is drawn considerably back and the muscles of the neck stiff and rigid; in the absence of spasm, the jaws are little or nothing affected; there is an increase of saliva from the mouth; pulse scarcely changed from that of a person in health.

Perstat in usu pilularum.

R. Emulsion. camph. uncias sex

Tinctæ. Opii unciam cum semisse,

Cap. coch. duo. ampla 2dis. horis. Omittatur affusio frigida.

29th.

A considerable quantity of fluid is discharged from the mouth, and the breath is tainted with mercurial fœtor; pain from the sternum to the spine very distressing; the muscles of the loins, lower extremities and back violently contracted, on the least change of posture; has taken about a bottle of wine since yesterday, in addition to the medicine which he took regularly; has had no operation in his bowels.

R. nicotianæ tabac. drachmas duas
 coque in aquæ pur. unciis sexdecera; cola,
 et fiat enema statim. injiciendum.
 Continr. pilulæ et mixtura.

30th—2, P. M.

Got two injections of tobacco yesterday, which mostly came off immediately after they were administered; the muscles in general seem much relaxed; abdomen softer; extremities

cold and dry; seems greatly exhausted; has had no return of the spasms for twelve hours.

October 1st.

Died without a struggle at eleven o'clock this morning.

CASE V.

July 10, 1811.—10, A. M.

THIS day I was called to a woman, æt. 28,, on plantations “Relief and Support,” who had been ailing for two days past, with a tightness in her jaws and difficulty in swallowing. The manager of the plantation had given her, yesterday, a dose of salts, and directed her neck to be rubbed with camphorated spirit; the symptoms got worse; the salts she took yesterday had little or no effect; countenance is strongly characteristic of her disease; pain at the epigastric region shooting back towards the spine.

R. scammonii gr. duodecem

Submur. Hydr. gr. octo

Syri. q. s. f. bolus statim deglutiendus,

Injiciatur enema purg. domest.—Post horas tres, cap. tinct. opii drachmas duas in alkohol. dilut. unciis duob. et repr. dosis 2dis horis.

6, *P. M.*

Had a copious evacuation about 12 o'clock ; has taken the tincture of opium three times at the stated intervals ; skin dry ; pulse 86 ; muscles of the neck rigid. I now ordered her to get three drachms of the tincture of opium in rum, every second hour ; the spine to be rubbed with mercurial ointment, and the epigastric region, with tincture of opium ; and a glass of Madeira wine be given frequently.

11*th*.

Has taken three drachms of the tincture of opium every second hour through the night ; got two clysters, and had one operation after the last ; the head and shoulders are rigidly drawn back, on the least attempt at motion ; pain of the epigastric region more severe ; spasmodic twitchings of the muscles of the upper

part of the body, occur every six or eight minutes.

Capiat tinct. opii semi-unciam 2da qq. hora; continuantur frictiones; bibat ad libitum vin. Madeir.

12th.

Slumbered a little last night; the medicine was given regularly in half ounce doses, every second hour; skin softer than yesterday; abdomen not so tense; the legs and thighs are now and then stiffly extended; the lips are kept apart by the contraction of the muscles; the patient points often to the ensiform cartilage, as in great pain.

R. Tinctæ. Opii drachmas sex
sp. vin. Gall. uncias tres.

This I gave with my own hands, at one o'clock, and ordered the former doses to be repeated every two hours; she also now took a pill every hour, containing two grains of opium

and two of calomel; the frictions were continued, and wine was given her freely.

13th.

Has had a small operation this morning; slept about an hour at intervals, in the course of the night; swallowing is performed sooner, and with less pain and anxiety than heretofore; there seems a slight discharge of saliva from her mouth; passed about a pint of pale coloured urine, yesterday evening; skin warm and moist; pulse 85.

Habeat tinctæ Opii unciam, in sp. vin. Gall. unciis tribus 2da
qque horâ. Perstat in usu Pilularum.

14th.

Appears every way easier; got two purgative injections last night; had an operation this morning; the legs are now capable of voluntary flexion and extension, and swallowing is

easier accomplished ; the lips are evidently relaxed ; salivation is present.

Continuantur omnia.

15th—11, A. M.

Has swallowed since this hour yesterday, at least *eight ounces* of the tincture of opium, together with about twenty grains of solid opium and as much calomel ; abdomen softer ; salivation, though not increased, evidently continues, and is accompanied with a slight mercurial fetor ; can swallow with comparative ease, and seems to perceive the medicine of service to her, and makes every effort to take it.*

Omittr. pilulæ.

Continuantur tinctur. opii et frictiones ex ungo. Hydr. bibat ad libit vini Mad.

This is a very unusual circumstance with persons in this disease.

16th.

Seems evidently to be gaining ground ; had three evacuations yesterday ; took some beef soup to-day ; the jaws can be opened more freely ; skin covered with perspiration.

Continr. tinct. opii—vinum, &c.

17th.

All the muscles are much relaxed this morning ; spasmodic twitchings disappeared ; pulse 90 and full ; skin warm and moist.

Bibat vini Lusitan. libras duas in dies. Capiat tinctæ. opii semi unciam 2dis. horis in sp. vin. Gall.

18th.

Slept about two hours last night ; jaws and neck are now but little affected ; complains of pain under the ensiform cartilage, on pressure ; salivation rather diminished ; has taken about

four ounces of tincture of opium since yesterday, and a bottle of Port wine; ate some rice with milk this morning; had an evacuation by the bowels, in the night. I ordered the wine to be continued, and the tincture of opium to be given in doses of about two drachms every second hour.

19th.

Seems in a fair way of recovery; the spasms have all yielded; bowels open; great debility present.

R Cinchonæ off. uncias duas
vini Lucitan. libras duas m.
Cap. cyath. vinos. alterâ quaquê horâ.
Sumat tinct. opii drach. duas mane et nocte.

21st.

Is much debilitated; slept about half of each of the preceding nights; has taken soup, rice, &c.

This patient gradually left off the tincture of opium, but continued the bark and wine for a couple of weeks, when she seemed perfectly restored to health.

REMARKS.—In this case, the opium was given in larger quantities than in any I ever met with. The patient (to my knowledge) enjoyed excellent health for years afterwards.

CASE VI.—(SYMPTOMATIC.)

February 5, 1810.

THE negro named AORAN, (plantation Land of Canaan) received a slight flagellation twelve days ago; the skin can scarcely be said to be cut; the parts, (over the glutei muscles,) merely a little bruised; came yesterday morning into the hospital, complaining of severe pain in the small of his back and loins; his head and shoulders are frequently drawn back, as in pain, which he refers to the small of the back; countenance characteristic; pulse as in health; had a small operation this morning, having taken last evening about forty grains of jalap; slept ill for two or three nights past; feels the back part of his neck somewhat stiff and painful; he can open his jaws as usual.

R. massæ pil. colocynth et aloes semi drachmam, submur hydri.
grana decem. f. pil. sex, quarum capiat tres statim, et repr. dosis post
horas quatuor.

4th.

Has taken all the pills which produced three operations; can't open his mouth as freely as yesterday; spasmodic twitchings occur every ten or twelve minutes, by which his head and shoulders are considerably drawn back; during the spasms of the muscles of the trunk of the body, the thighs and legs are suddenly extended; respiration laborious; heat of the body rather above the natural standard.

Capiat tincturæ opii drachmas tres secundis horis; et subm.
hydrarg. gr. quatuor (form. pil.) ter de die. Adhibeatur balneum
tepid.

5th.

Has taken the tincture of opium regularly since twelve o'clock yesterday; slept little or none in the course of the night; has been twice

in the warm bath, and expressed relief from it ; jaws during the spasms (which occur now every five or six minutes) are closely contracted, and the head and shoulders drawn back, so as to make the body in some measure describe the arch of a circle ; abdomen tense and hard.

I now gave this patient half an ounce of the tincture of opium in about four ounces of rum, and directed the former doses to be continued ; the warm bath to be repeated three times a day, and the neck and spine to be rubbed with mercurial ointment ; the calomel pills to be continued, and a purgative injection to be thrown up every two or three hours.

6th—2, P. M.

Has been twice this day in the warm water, and seems much relieved while in it ; has taken

the medicine regularly ; had a copious evacuation in the night ; skin covered with perspiration ; countenance all along extremely characteristic ; thinks he can swallow easier.

Continuántur omnia.

7th.

Slept a little last night ; had an operation after he came out of the warm bath this morning ; says he does not “ feel his body so tight ; ” skin covered with perspiration ; there is an increase of saliva from the mouth, and his breath is evidently tainted with mercurial fœtor.

Perstat ut heri.

8th.

Seems much better ; can swallow with tolerable ease ; the head and shoulders are constantly kept further back than natural ; took

some rice and milk this morning ; slight spasms occur about every quarter of an hour.

Omittr. pilulæ ex. submur. hydri.

Perstat. in usu tinct. opii, &c.

9th.

Is every way better ; head and shoulders continue drawn considerably back ; slept about three hours last night ; has taken about half a bottle of Port wine since yesterday ; abdomen much softer ; had a natural operation this morning.

Habeat tinct. opii drachmas duas alternis horis ; omittr. balneum tepid. bibat ad libitum vini.

10th.

The disease is subdued ; salivation continues ; slept half of the night ; took some soup to-day. The tincture of opium was gradually left off ; the patient remained in the hospital, taking bark and wine till the 20th, when he went out perfectly well.

CASE VII....(SYMPTOMATIC.)

April 10, 1812—9, A: M.

THIS day the negro named FAVOURITE (Plantation "Covent Garden") complained of difficulty of swallowing, and pain under the sternum : felt unwell yesterday, and took two ounces of salts, which produced little or no effect : slept badly : feels tightness about the jaws : countenance peculiar.

About ten days ago, he trod on an old nail, which penetrated the heel about a quarter of an inch ; the wound bled a few drops—was poulticed, but attended with little or no suppuration, and has given but little pain or uneasiness since it happened. I made an opening into it with a lancet, and there issued from it about

two tea-spoonfuls of a dark purulent matter. I directed a hot poultice to be applied to it, and renewed every four or five hours.

R. pulv. jalappæ scrupula duo

Submur. Hydr. gr. octo syr. q. s.

fiat bolus, statim sumendus et post horas tres, (si prius non soluta fuerit alvus) injicur. enema purgans.

3, P. M.

Got the injection about twelve o'clock, and has had since two plentiful evacuations, and passed urine; spasmodic twitchings appear to have begun; complains much of pain under the sternum; pulse 86; heat of the skin above the natural standard.

R. opii duri sem. drachmam

Submur. Hydr. scrupula duo

fiant pil. decem. cap. unam 3tiâ quaque hora. Applic. sterno
Empl. meloes cantharid. Injic. enema purg. bis quotidie.

11th.—2, P. M.

Got a little sleep last night; thinks the blistering plaster relieved the pain under the ster-

num; had an operation yesterday evening, about an hour after the administration of the injection; has taken five of the pills since yesterday, and about a bottle of wine, which he frequently calls for with water; spasmodic twitchings more frequent; tightness of the jaws not increased; if any thing, rather better; this he attributes to flannel filled with hot sand, which the nurse applied round the neck during the night.

Continuantur pilulæ

Capiat 5tiâ qq. hora tinctæ. opii drachmas duas in alkohol. dil. unciis duob.

12th.

Got about an hour's sleep last night; spasmodic startings of the muscles of the shoulders and back very frequent; can swallow rather easier; skin covered with perspiration.

*Perstat in usu pilul. et tinct. opii,
Fricatur spina ungo. ex Hydri.*

13th.

Has taken the pills and tincture of opium regularly; jaws evidently relaxed; pain at the ensiform cartilage much relieved; the salivary glands are affected by the mercury; complains of his legs being very itchy, and wishes them to be rubbed.

14th—3, *P. M.*

Seems every way better; has had little or no return of the spasms since morning; abdomen soft and natural.

Omittr. pilulæ.—Habeat tinctæ. opii semi-unciam, in
sp. vini Gall. tertiis horis.

15th.

The breath is strongly impregnated with mercurial fetor; the legs continue itchy, and are frequently rubbed with a coarse cloth; they are covered with an eruption, which imparts to

the finger a rough sandy feel; pulse 90, and small; took a little beef soup to-day.

Cap. tinct. opii drachmas tres, in dies.

17th.

Is entirely over the disease; is much emaciated, and greatly reduced in strength; the eruption on the legs has nearly disappeared, though they still continue remarkably itchy.

This man continued in the hospital, till the effects of the mercury had subsided, when he began to use the cold bath, and to take bark.— I had the satisfaction of seeing him perfectly restored to health.

CASE VIII.

January 20, 1814.—9, A. M.

A WOMAN named SUSANNAH (æ. 24), belonging to plantation "Garden of Eden," had trodden on a broken bottle, on the 12th inst. A small bit of the glass (according to her own account) had remained in her foot for two or three days after the accident; the wound was poulticed; she was not then ordered into the hospital, nor did her situation excite any particular attention till this day, when she complained of stiffness in the small of her back and loins, with a pain under the breast, which frequently darts back towards the spine; she cannot open her mouth so wide as usual; the countenance is strikingly characteristic.

This woman expressed a strong desire to be bled, which she said, she knew would “take the pain from her breast.” I accordingly took about fourteen ounces of blood from her arm, and directed her to get eight grains of calomel immediately, and two ounces of the sulphate of soda, two hours after ; her spine to be rubbed with mercurial ointment, and three drachms of the tincture of opium to be given in wine or spirit, every two hours, beginning after an operation or two by the bowels.

21st—11, *A. M.*

All the symptoms are aggravated ; had two operations yesterday afternoon ; could be induced to take only two doses of the tincture of opium ; is obstinately averse to any thing under the shape of medicine ; slept none since yesterday.

I directed her to be put into the warm bath; a blistering plaster to be applied on the breast, and to get five grains of opium, with three of calomel, in two pills, every second hour, and a desert spoonful of the tincture of opium, in wine or spirit, three or four times a day; the mercurial frictions to be continued.

23d.

She has been in the warm water twice, and expressed herself better after it; took the pills, disguised in Guava jelly, three times, but now refuses to take any thing except wine, or arrow-root pap; she *permits* the mercurial frictions to be continued, and is partial to the warm bath, which she uses three or four times in the twenty-four hours; spasmodic twitching of the muscles of the neck and upper part of the body and back, are very distressing, and recur every five or six minutes.

The warm bath, mercurial frictions, with purgative and opiate injections, alternately, were persisted in till the 25th, when all the muscles became relaxed, and deglutition performed nearly as in health. The attendants thought her over the disease, and certainly present appearances would, to most people, have been very flattering ; her pulse was slower than (it is in these countries) in health ; it was at 68 ; heat of the body natural ; she had three evacuations this morning ; appeared, however, much exhausted. She continued in this state of relaxation, and perfectly tranquil, for twelve hours, when she slumbered into death.

CASE IX.

*Of a negro, named COLIN, æt. 18, plantation
Land of Canaan.*

June 10, 1814.

THIS man came into the hospital on the 24th of last month, with a recent cut on the fore part of his leg, about an inch and a half in length, obliquely across the muscles. From the time he came into the hospital, his wound was dressed with balsam copaiva, and is now almost well. On this day (10th of June) he was presented to me, as having passed the last two nights ill, having been restless and feverish. On asking him, had he any pain about his jaws, (which I was led to do entirely from his countenance) he said he felt a slight sense of tight-

ness about the angle of his jaws, when he attempted to open his mouth wider than usual; abdomen is harder than in a state of health; bowels costive; pulse 78.

R. submur. hydrargi. gr octo
 pulv. jalappæ gr. triginta
 syri. q. s. fiat bolus statim sumendus; post operationem capiat
 tincturæ opii cochleare parvum (a desert spoonful) alternis horis.

In addition to this, I directed a warm poultice to be applied to the wound, and the patient to get as much wine as he could be induced to swallow.

11th—9, A. M.

Had three operations from the jalap and calomel; has taken the tincture of opium every second hour since five o'clock yesterday evening, and nearly a bottle of wine since the same hour; complains much of stiffness of the neck and jaws; slept none during the night.

Continuatur tinct. opii.

Capiat 3tiis horis opii duri grana duo, et submuriatis hydrargi. grana tria (form pil.) 'Injicr. enema purgans bis quotidie. Fricatur spina ungo, hydri.

12th.

Has taken the medicine regularly; slept about an hour last night; had a small operation after the injection this morning; respiration hurried; pulse 80; the least pressure on the abdomen brings on strong spasms of the muscles of the neck and back; complains for the first time, of a pain at the lower part of the sternum; the act of deglutition takes up a considerable time; tightness of the jaws is rather increased.

I now directed the tincture of opium to be increased one third, and given every second hour; the pills to be composed of four grains of opium and three of calomel, in each dose, given

every third hour; the injections and mercurial frictions to be continued, and the patient to be put into the warm bath in the evening.

13th.

Took his medicine regularly; slept some during the night, and had a large operation about seven o'clock this morning; says his jaws are not so tight to-day; has been twice in the warm bath; complains less of pain under the sternum; skin softer.

Continuantur medicamenta.

14th.

Pain under the sternum is somewhat relieved; abdomen softer; spasmodic startings less troublesome, can turn his head easier than yesterday; there is a considerable discharge of saliva from the mouth.

Omittit. pilulæ. Continuantur tinctura opii—vinum—balneum tepid, &c.

15th.

Complains of pain about his loins, and says his “ legs are heavy ;” swallows with less pain, but requires a much longer time for this act, than when in health ; the countenance is more natural, and the symptoms in general much alleviated.

A desert spoonful of tincture of opium was now directed to be given every two hours, and the warm bath to be used once a day.

16th.

Stiffness of the neck and spine still continues, though in a trifling degree ; the bowels are open, and the constitution seems evidently under the influence of mercury ; has taken some fowl soup and other nourishment, at different times.

The tincture of opium was now directed to be given three times a day, and as much wine during the twenty-four hours, as he could be induced to take.

18th.

The tension and spasms have all subsided; the wound has not been attended with any considerable pain, and is now scarcely perceptible.

This man gradually left off the tincture of opium, and was by the 25th, perfectly restored to health.

The result of these nine cases is not to be supposed as tending to convey any conclusive information, as to the general proportion of recoveries in Tetanus. This indeed must greatly depend on the timely assistance of medical aid.

Supposing, however, that the disease is observed about the commencement, and treated with that decision and energy which the nature of it plainly requires, I am of opinion that we might rate the recoveries against the deaths, in the Symptomatic species, in the proportion of about six to seven; and certainly the last thirteen cases which came under my care, (some of which only I have stated in this Essay) fairly led to this conclusion:

THE END.

ERRATA.

- Preface...line 5th...for G, 40, Long. 55 N....*read*, G, 40, N. Long. 55, W.
Page 65 ... 7th...*add* *
..... 66 ... 13th...*dele* *
..... 85 ... 14th...*for* continuentur, *read* continuantur.
..... 98 ... 15th...(note) *add* *
.... 102 ... 4th...*for* glutei, *read* glutæi.

